

THE ANNALS

AND

MAGAZINE OF NATURAL HISTORY.

[FIFTH SERIES.]

No. 12. DECEMBER 1878.

XLVIII.—*New Hydroids from Ochotsk, Kamtschatka, and other Parts of the North Pacific Ocean.* By C. MERESCHKOWSKY.

[Plates XVI. & XVII.]

THERE exists a very fine collection of Hydroids from the northern parts of the Pacific Ocean—from Kamtschatka, the sea of Ochotsk, the Aleutian Islands, and our former possessions in North America. This collection, which belongs to the Academy of Sciences of St. Petersburg, has been brought together at different times and by different persons, but especially by Middendorff and Wosnessensky. It is in the form of a herbarium, all the specimens being dried; but in other respects its condition is very good, although, certainly, delicate species, such as the Campanulariidæ and all the Athecata, can no longer be investigated.

Dr. A. Brandt, conservator of the Zoological Museum of the Academy, has had the kindness, for which I have to thank him, to lend me this collection for examination; and in this article it is my intention to describe some new species which I have met with in it, and which are not without interest*. I shall commence with the genus which I not long since named *Polyserias*.

* Short diagnoses of all these species have already been published in Russian in the Transactions of the Society of Naturalists of St. Petersburg, vol. ix.

SELAGINOPSIS (=POLYSERIAS).

Since my article on this genus in the 'Annals,' and a short note on the same subject published a little later*, I have had the opportunity of seeing the interesting article by Mr. Allman† on new Hydroids from various countries, in which, among other things, that gentleman describes two new genera, *Selaginopsis* and *Pericladium*. As may be seen from the diagnoses and descriptions that he gives of the species of these two genera, the second differs from the first only "in the disposition of its hydrothecæ in longitudinal series, as well as in its totally different type of ramification"‡. The Rev. A. M. Norman §, who has added some species to the genus *Selaginopsis*, accepts it in the same sense as Mr. Allman has done, and separates it from the genus *Pericladium*. Now it is certain from the species that I have been able to examine, some of which have been described by me, whilst others will be described in the present paper, that neither from the arrangement of the hydrothecæ, nor from the mode of ramification, is it possible to separate the two genera from each other, but, on the contrary, we find ourselves compelled to unite them in a single one, in the sense in which the genus *Polyserias* was established by me. As regards the different form of ramification I may remark at once that *Pericladium bidentatum*, for example, differs essentially from *Selaginopsis mirabilis*, one having ramifications in all planes, as in *Thujaria thuja*, and the other having them only in one plane; but as to the form and arrangement of the hydrothecæ they resemble one another to such a degree that it would be purely artificial to separate them into two different genera. As regards the arrangement of the hydrothecæ "in longitudinal series," this character is common to both genera; and, in fact, the diagnosis of the genus *Selaginopsis* might be accepted without the least alteration for *Pericladium*, and *vice versa*.

It is therefore evidently useless to continue to distinguish these two genera, which I propose to unite into a single one, to which I propose to give the name of *Selaginopsis*, as the first described by Mr. Allman, and the one which has been most employed. I will therefore pass to the description of the species which I have examined.

* Ann. & Mag. Nat. Hist. ser. v. vol. i. April and May, 1878.

† Journ. Linn. Soc. vol. xii. (1876), p. 251.

‡ Ibid. p. 272.

§ Ann. & Mag. Nat. Hist. ser. 5, vol. i, March 1878.

1. *Selaginopsis triserialis*, sp. n. (Pl. XVI. figs. 1, 2.)

Trophosome. Hydrocaulus straight, not angularly bent, broader than the branches. Branches arranged alternately and subspirally, springing from all sides, diminishing towards the apex, and ramifying several times. The hydrothecæ, almost entirely immersed in the axial tube and of a cylindrical form, a little narrowed towards the orifice (which is oval with two angles), are placed in three longitudinal series.

Gonosome. Not known.

Locality. Kamtschatka (*M. Kastelsky*).

This small species, which comes from Kamtschatka, is represented in the Academy's collection by only a single specimen (Pl. XVI. fig. 1), 37 millims. long. The lower extremity of the stem, with a small disciform enlargement, was not fixed to any object. The general form of the colony is conical; it diminishes very gradually, so that at its apex it is more or less pointed. The stem is straight, divided into internodes, each having from two to four branches, and bears annulations at its base. The branches, which are arranged on all sides of the principal stem, are excessively slender compared with those of all the other species of this genus, which is explained by the small number of series (three) in which the hydrothecæ are arranged; they are placed at an acute angle to the principal stem, and become shorter and shorter as they approach the apex; they may divide in their turn, usually two or three times, rarely more. The hydrothecæ are arranged in three regular series (Pl. XVI. fig. 2), and in such a manner that no two orifices of the three series come at the same level; this character of the arrangement of the hydrothecæ in three series is perfectly constant in the species in question. The hydrothecæ are almost entirely immersed in the axial tube, to which they are adnate; their orifices, which are compressed, oval, and furnished with two angles, alone project more or less, but in all cases very slightly, from the surface. The two angles are always distinct, although they are not produced into two distinct teeth as, for example, in *Selaginopsis mirabilis*. The form of the hydrothecæ is more or less cylindrical, narrowing a little towards the upper extremity. A small tube with its margins slightly reverted establishes the communication between the cavity of the hydrotheca and that of the axial tube, in the same manner as is described by me in *Selaginopsis Hincksii*, mihi.

Width of a branch 0.55 millim.; length of a hydrotheca 0.45, its maximum breadth 0.25,

This is a very characteristic species, and may be easily recognized by the triserial arrangement of its hydrothecæ, which produces the extreme fineness of its branches. In the mode of its ramification and the form of its hydrothecæ it does not differ greatly from the other species. As all the other species have 4, 6, 8, or more longitudinal series of hydrothecæ, *Selaginopsis triserialis*, having only three, must consequently be regarded as the simplest form.

It might be supposed that the number of series in the polyserial type had originated from the biserial type by the displacement of the hydrothecæ in the two series alternately to one side and the other, which would produce the division of one series into two, as indicated by *Selaginopsis fusca*, Norm., and *S. Allmani*, Norm., in which the series are arranged in pairs—which would be the most plausible and natural explanation. Unfortunately *Selaginopsis triserialis* only serves to throw the question into confusion; for this species can by no means be explained as having originated from the biserial type.

2. *Selaginopsis pinnata*, sp. n. (Pl. XVI. figs. 3, 4.)

Trophosome. Hydrorhiza in the form of a thin and continuous layer, not composed of hydrophytons. Hydrocaulus simple, straight, not angularly bent, annulated at the base, divided into regular internodes. Branches pinnate, straight, springing alternately from two sides, not divided into internodes. Hydrothecæ arranged in *four* regular series, almost entirely immersed in the tubular axis; they do not follow one another immediately in the same series, but leave a certain interval between them. Their form is cylindrical, a little narrowed at the end, with a very short neck, springing outward from the axis; aperture oval, very slightly angular at the two sides.

Gonosome. Unknown.

Locality. Port Ajan (*M. Vosnessensky*, 1848).

The hydrorhiza is formed by a thin layer covered with perisarc (Pl. XVI. fig. 3, *per*), and not composed of tubes united together, as described by me in *Sertularia albimaris*; here, on the contrary, the perisarc is continuous, covering, on shells, spaces sometimes of more than a square centimetre. The hydrocaulus is erect, stout, cylindrical, very long, divided into regular internodes about 8 millims. in length, broader than the branches; its colour is a darkish brown, becoming lighter towards the end, where the branches commence, which are also light brown. Usually only one half or one third, or sometimes even one fourth, of the stem is covered with branches, all the rest being entirely destitute of them (Pl. XVI.

fig. 3). The colony is regularly pinnate; the branches, springing at an acute angle, are arranged alternately; they are of moderate length, and only diminish towards the extremity. Usually each internode bears three pairs of branches. The branches are cylindrical, straight, with their surface smooth (which distinguishes them from those of *Selaginopsis mirabilis*), uniting with the hydrocaulus by a short constriction; their colour is of a very light brown, never becoming darker towards the end, as is always the case in *S. mirabilis*. Sometimes, although very rarely, a branch gives origin to a secondary branchlet near its extremity.

The hydrothecæ are arranged in two series upon the principal stem, and in four regular longitudinal series upon the branches; and this character is perfectly constant (Pl. XVI. fig. 4). Their form is not very characteristic; the hinder part, which is the widest, is rounded, and communicates with the tubular axis by a small tube with the margins slightly reverted. A little neck in the form of a very short tube is placed vertically to the surface of the stem and turned outwards; it terminates in an aperture, which is large, oval, and usually furnished with two angles, which, however, are scarcely, if at all, produced into teeth, as also in *Selaginopsis triserialis*; but here it sometimes happens that there is no angle and the orifice appears regularly oval or even round.

Length of the largest individual 180 millims. (it is therefore one of the largest species); breadth of the colony about from 30 to 35; length of the branches usually 20, sometimes 25; breadth of the hydrothecæ 0·27, of all the branches 0·5; length of the hydrothecæ 0·5; diameter of the aperture 0·14.

This fine species is represented in the collection of the Museum by several large specimens attached to fragments of *Modiola modiolus*; it most nearly approaches *Selaginopsis Hincksii*, mihi, by its mode of ramification, the fact that the surface of the branches is smooth, and the form of its hydrothecæ. But it differs therefrom essentially by its four series of hydrothecæ (*S. Hincksii* always has six), as also by the smaller length and breadth of its branches. At present I know five species of this genus which have colonies of a plumose form—namely, *S. mirabilis*, Verr., *S. Hincksii*, mihi, *S. Allmani*, Norm., *S. fusca*, Johnst., and *S. pinnata*, mihi; all the other species have branches springing not from two sides only of the principal stem, but from all sides, thus affecting a habit quite different from that of the above five species.

3. *Selaginopsis pacifica*, sp. n. (Pl. XVI. figs. 5-7.)

Trophosome. Hydrocaulus slightly curved, divided into regular internodes. Branches arranged alternately *on two sides of the principal stem*, two pairs on each internode, divided into five internodes, constricted at the point of attachment and at the internodes. Each branch bears one or two, rarely five, secondary branches. Hydrothecæ cylindrical, almost entirely immersed in the substance of the axial tube; aperture oval, with two angles (not teeth); hydrothecæ arranged *in four regular series*, and at the same time in a spiral, the hydrothecæ of each series following one another immediately without leaving any free space or interval.

Gonosome. Gonangia arranged in two or three series, of an oval form, narrowing gradually towards the base, and truncate at the apex. The surface is ribbed.

Locality. Metschigman Bay.

The hydrocaulus of this species, in the two specimens possessed by the Academy of Sciences, is not straight, but elegantly curved (Pl. XVI. fig. 5), which may be a constant character. The whole colony is of a light greyish-yellow colour, and, owing to the subdivision of the branches into secondary branches, it acquires a tufted character, which, however, is not produced by division in several planes; on the contrary, both the primary and secondary branches all originate in the same plane. The branches, moreover, become gradually shorter as they approach the apex. The branches usually have a strong constriction in the middle, so that the two internodes thus produced are united only by means of a very slender piece. The hydrothecæ are always arranged in four regular series (Pl. XVI. fig. 6); and it is only very rarely that we meet with a small branch having only three series, as in *Selaginopsis triserialis*. The hydrothecæ are cylindrical, rounded at their posterior part, which is furnished with a small tube to communicate with the cavity of the cylindrical axis. The orifice is oval, furnished with two angles (which, however, are never developed into teeth), and placed at the extremity of a small neck in the form of a very short tube. No two orifices of the four series of hydrothecæ are ever situated at the same level; in other words, we find a very evident spiral arrangement around the cylindrical axis, a character which, as will be shown, appears to be common to the whole genus. It must also be remarked that the hydrothecæ of each series follow each other almost always without interruption and without leaving any interval; on the contrary a part of the superior

hydrotheca is covered by the little neck of the hydrotheca following it inferiorly, and it is rare to see a little space between them, whilst in the preceding species the interval always exists.

The gonophores (Pl. XVI. fig. 7) are in great numbers, oval, ribbed on the surface, furnished with a round aperture placed at the extremity of a very small cylinder; they are arranged in three series.

Length of the colony about 60 millims.; width of a branch 0·6; length of the hydrothecæ 0·5, their breadth 0·27; length of the gonangia 1·2, their breadth 0·55.

This pretty species is most nearly related to *Selaginopsis pinnata*, from which, however, it differs in habit, in the mode of ramification and, especially, the subdivision of the branches, as also in the absence of intervals between the hydrothecæ which follow each other in the same series.

4. *Selaginopsis thuja*, sp. n. (Pl. XVI. figs. 8-10.)

Trophosome. Hydrocaulus straight, angular, spiral, divided into internodes bearing branches which spring from all sides of the principal stem and are attached by means of a tubular process of the latter. Each branch divides at a certain distance from the point of attachment into two, each of which subdivides again into three branchlets, thus forming a complex of six branches. Hydrothecæ more or less conical, broad and round at the base, a little narrowed at the apex, arranged in six or seven series. Aperture without teeth or angles, round or oval.

Gonosome. Gonophores sparse, oval, truncate at the apex, and narrowing gradually to the base.

Locality. Northern Pacific Ocean.

In habit this species (Pl. XVI. fig. 8) is just like *Thujaria thuja*. The whole colony is cylindrical, only a little narrowed towards the apex. The hydrocaulus is divided into regular internodes by deep annulations, and bears on all sides short tubes, spirally arranged, to which the branches are attached. Each branch (Pl. XVI. fig. 9) divides only at a certain distance from its point of attachment, which is very characteristic of this species, and distinguishes it from *Selaginopsis decem-serialis*, to which we shall refer hereafter. The branch first of all divides dichotomously into two parts, each of which is in its turn formed by three small branches nearly of equal length. Width of the branches moderate. Colour greyish brown; that of the principal stem dark brown. The hydrothecæ are arranged in several series, the number of which is not constant; but usually a branch has five series at its base,

then six, and finally seven series at its extremity; and I have very rarely met with cases in which the end of the branch had fewer than seven series. The form of the hydrothecæ is not cylindrical as in most species of the genus, but more or less conical (Pl. XVI. fig. 10) and rather elongate; this last character, however, is not very constant, and occasionally we meet with hydrothecæ having the ordinary, more or less cylindrical form. The aperture is oval or round, without any trace of teeth or even of angles. The hydrothecæ of each series are arranged so as to leave small intervals between them. The gonosome has nothing very characteristic about it, and scarcely differs in any way from the normal form; that is to say, it is oval, truncate above, and narrowed below.

Length of the entire colony 75 millims., breadth 15; width of the branches 0·7; length of hydrothecæ 0·45, maximum breadth 0·25; length of gonothecæ 0·7, their width 0·5.

The Academy of Sciences of St. Petersburg only possesses a single specimen of this species, the ticket belonging to which has been lost, so that the only locality I am able to give is the Northern Pacific Ocean; but it is very probable that the species comes from the sea of Ochotsk or from Kamtschatka. *Selaginopsis thuja* is distinguished by its mode of ramification (six branches), by the form of the colony, and by the form of the hydrothecæ and their arrangement in six or seven series.

5. *Selaginopsis ochotensis*, sp. n. (Pl. XVI. figs. 11, 12.)

Trophosome. Hydrocaulus straight, angular, bearing branches on all sides, which are attached by means of a cylindrical tube springing from the stem. Each branch divides at some distance from the point of attachment into *six* long and broad branchlets. Hydrothecæ arranged in several regular series, *most frequently in eight or nine*, and at the same time spirally; they are not entirely immersed in the substance of the axial tube, but their ends project. Aperture compressed, furnished with two large teeth.

Gonosome. Gonangia arranged *along the whole length* of the branches, pyriform, with a straight, not bent neck, and with the surface smooth.

Locality. Sea of Ochotsk (*M. Djuktshandran*, 1844).

This species, of which the Museum of the Academy possesses two specimens, is very characteristic, and quite distinct from all the others that I have just described. The hydrocaulus is broad and angular, and bears branches on all sides in such a fashion as to form in the whole the habit of *Thujaria thuja*, but much more robust than the latter in consequence of the greater breadth of the branches. At the apex of the

colony the branches become a little shorter (Pl. XVI. fig. 11). The colour is a rather light brown. Each branch divides at a certain distance from its point of attachment at first into two; and then each half is again subdivided into three, thus forming a complex of six small branches (Pl. XVI. fig. 12). The hydrothecæ are just the same as in *Selaginopsis mirabilis*, Verr., with the same two teeth, and the neck projecting strongly outwards, giving an uneven appearance to the surface of the branches. The branches are uniform throughout their length, equally arranged, and are not divided into internodes as in *S. bidentata*, Allm.* The gonangia also are arranged on the whole length of the branches, and not merely upon a single internode (the first or inner one) as in the species just mentioned. The gonangia (Pl. XVI. fig. 12 a) differ from those of *S. bidentata* in not being curved at the basal part, and in being quite smooth (not ribbed) on the surface. Their form is a little variable; and as they are very numerous on the branches and pressed close together, it often happens that they are a little deformed and more or less flattened by pressure.

Length of the entire colony 125 millims., its width 25; length of hydrotheca 0·45, its breadth 0·3; length of the gonophore 1·3, its breadth 0·7; width of a branch 0·8.

This species is very well distinguished from *Selaginopsis mirabilis*, Verr., by the general form of the colony, and by the arrangement of the branches on all sides of the stem, as also by the greater number of the series of hydrothecæ, which varies from eight to ten, being generally eight or nine, whilst *S. mirabilis* has constantly only six. From *Selaginopsis bidentata*, Allm., its nearest relative, it is distinguished by the absence of any special part of the branches destined to bear the gonangia and separated by a transverse joint, also by the more tufted habit of the whole colony †, by the six branches united in each group, while *S. bidentata* has only four (which, in fact, causes the less tufted habit of the colony), and, lastly, by the form of the gonangia. The two species are very nearly allied, although it is impossible to unite them under a single one. It would be desirable to know exactly the number of series in which the hydrothecæ are arranged in *S. bidentata*; for Mr. Allman does not state the number. To judge from the figure there seems to be in this respect no difference between the two species. As to the arrangement of the hydrothecæ in "verticils," this term cannot be regarded as correct; for in reality

* Journ. Linn. Soc. 1876, vol. xii. p. 273 (*Pericladium bidentatum*), pl. xx. fig. 2.

† Allman, *l. c.* fig. 1, and my fig. 11, Pl. XVI.

neither in *S. bidentata* and *ochotensis*, nor in any other species belonging to the genus, do we ever see a truly verticillate arrangement (we can observe only an arrangement in longitudinal series and in a spiral); on the contrary, it may be asserted of this genus that no orifice of a hydrotheca is ever placed at the same level as another.

6. *Selaginopsis decemserialis*, sp. n. (Pl. XVII. figs. 13-16.)

Trophosome. Hydrocaulus straight, cylindrical, very thick, angularly bent, divided into internodes. Branches springing from all sides by three together, dividing at the very point of their attachment, united with the stem by means of a little tube; straight, simple, cylindrical, becoming shorter towards the apex. Hydrothecæ large, cylindrical, with an oval aperture, entirely immersed in the substance of the axial tube, arranged in ten regular longitudinal series, and forming at the same time a spiral round the axis.

Gonosome. Gonangia arranged in several longitudinal series, more or less cylindrical, narrowed at the base, and furnished with a wide and short cylindrical elevation at the apex, most frequently turned inwards.

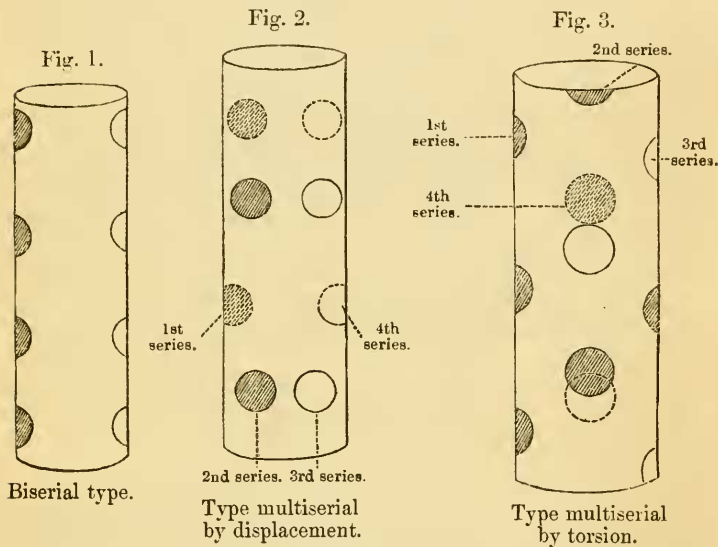
Locality. Northern Pacific Ocean (shore of Pallana, *M. Wosnessensky*, 1849).

This interesting species belongs to the type of *Selaginopsis* affecting more or less the general aspect of *Thujaria thuja*. In *S. decemserialis* this habit is exactly reproduced, especially in a variety of the species which I have figured Pl. XVII. fig. 13. This variety differs from the normal type by its branches being shorter, and not diminishing as they advance towards the apex, which is also the case in *Thujaria thuja*, and causes the general form of the colony to be cylindrical; whilst the normal form has the apical branches only one half or one third the length of the lower ones, although of the same thickness, producing a general conical form of the colony. The hydrocaulus is long and destitute of branches for the greater part of its length (just as in *Thujaria thuja*); it is angular; and each angle bears a short but wide tube, which serves as a base for three united branches. The mode of ramification of the branches is very consistent in the different species. As we have seen, in *Selaginopsis thuja* and *S. ochotensis* the branches subdivide into six parts, and not from their actual point of attachment, but at a certain distance therefrom; while here there are always only three small branches, and they unite at the very point of their attachment (Pl. XVII. fig. 14).

Sometimes in this species we see the principal stem divide

into two, and each half bear at its extremity a fresh series of branches, a new colony. The hydrothecæ are arranged in ten regular series; but this character is not perfectly constant; sometimes, although rarely, we meet with very slender branches which have only seven or eight series; and, further, the number ten appears to be most constant at the ends of the branches, where it is almost always met with; whilst towards the point of attachment the number very often diminishes, becoming nine, eight, and sometimes seven, or even six. The great number of series causes the branches to be very thick; in this species they attain the greatest thickness that I know.

The hydrothecæ are arranged so as to form not only longitudinal series, but also a very regular spiral line around the axis (Pl. XVII. fig. 15). This character is not the exclusive pecu-



liarity of *Selaginopsis decemserialis*, but, as we have already seen, it belongs also to the other species that I have described; throughout we have found that no two orifices of the more or less numerous series ever come at the same level. This spiral arrangement, which, as I believe, is common to the whole genus, renders it possible to attempt an explanation of the polyserial type, not by means of the displacement of the hydrothecæ of each series in the biserial type (that is to say, by the division of each series into two, three &c.), but simply by the torsion of the axial tube, which would produce a spiral and,

at the same time, polyserial arrangement of the hydrothecæ. The figures 1-3 (p. 443) will explain what I have just said. Fig. 1 represents a biserial type; fig. 2 is a polyserial type, produced by the alternate displacement of the hydrothecæ of the same series, one to the left, the other to the right. The round spaces, of which the surface is shaded, represent the hydrothecæ belonging to the same series. It is thus that the first series in fig. 1 has divided into the first and second series in fig. 2. Lastly, fig. 3 represents the same polyserial type, but arising in this case from the torsion of the series and their position in a spiral. In fact all the species (as for example, *S. mirabilis*, *S. Hincksii*, *S. ochotensis*, and *S. decemserialis*) which have many series, and even those which have only a few (as for example, *S. pinnata*, *S. pacifica*, and even *S. triserialis*), show a very marked spiral arrangement, just as represented in the diagrammatic figure 3. If my explanation of the origin of the polyserial type by torsion were not correct, if it were necessary to accept the other explanation, we should also have to expect that, on the contrary, the arrangement represented in fig. 2 would predominate in the different species—which, however, is not the case; the spiral arrangement, as also the fact that all the apertures of the hydrothecæ in this genus are placed at different heights, cannot be explained without accepting the explanation that I have given above.

Length of the largest colony of *Selaginopsis decemserialis* 180 millims., breadth (maximum) 25; breadth of a branch 1.25; length of the hydrotheca 0.45, its breadth 0.25.

The museum of the Academy of St. Petersburg possesses several examples of this species, which differs from all the others by the decemserial arrangement of its hydrothecæ, as well as by its habit and mode of ramification.

I now proceed to mention all the other species of this genus at present known, which, together with those just described, constitute a considerable number.

7. *Selaginopsis Hincksii*, mihi.

Polyserias glacialis, Mereschk. Ann. & Mag. Nat. Hist. ser. 4, vol. xx. (1877), p. 228.

Polyserias Hincksii, Mereschk. Ann. & Mag. Nat. Hist. ser. 5, vol. i. (1878), p. 337, pl. xv. figs. 1-4.

Colony plumiform, very large and broad; branches simple, springing alternately from all sides of the stem; hydrothecæ entirely immersed in the substance of the axial tube, ar-

ranged in six regular series; aperture round or oval. Gonangia pyriform. Length 200 millims., breadth 100.

Locality. White Sea and Glacial Ocean (*C. Mereschkowsky*).

8. *Selaginopsis mirabilis*, Verrill.

Polyserias mirabilis, Mereschk. Ann. & Mag. Nat. Hist. ser. 5, vol. i. (1878), p. 335, pl. xv. figs. 5, 6.

Selaginopsis mirabilis, Norm. Ann. & Mag. Nat. Hist. ser. 5, vol. i. (1878), p. 192.

Colony plumiform; branches simple; hydrothecæ half projecting from the stem, arranged in six series; aperture with two teeth.

9. *Selaginopsis cylindrica*, J. F. Clarke.

Thujaria cylindrica, J. F. Clarke, Scient. Results of the Expl. of Alaska, vol. i. (1876), p. 22, pl. x. fig. 57.

Colony plumiform; branches disposed alternately, subdividing; hydrothecæ arranged in from four to six series, entirely immersed in the substance of the stem.

Locality. Alaska, Bering Sea, Chichi Islands.

10. *Selaginopsis bidentata*, Allm.

Pericladium bidentatum, Allm. Journ. Linn. Soc. vol. xii. (1876), p. 273, pl. xx. figs. 1-4.

Colony in the form of *Thujaria thuja*; branches subdividing into four, and each divided into two internodes, of which only the inner one (the first) bears oval gonangia; hydrothecæ in eight to ten (?) series, not entirely immersed; aperture with two teeth.

Locality. Japan.

11. *Selaginopsis Allmani*, Norm.

Selaginopsis fusca, Allm. *l. c.* p. 272, pl. xii. fig. 1, and pl. xix. figs. 1, 2.

Selaginopsis Allmani, Norm. Ann. & Mag. Nat. Hist. ser. 5, vol. i. (1878), p. 192.

Branches arranged on two sides of the stem, subdividing; hydrothecæ not entirely immersed, cylindrical, with the margin slightly waved, arranged in four rows (in pairs); colour very dark.

Locality. Japan.

12. *Selaginopsis fusca*, Johnston.

Sertularia fusca, Johnst.

Selaginopsis fusca, Norm. *l. c.* p. 191.

Colony plumiform; hydrothecæ arranged in four series, in twos on each side of the very compressed branch.

Locality. England.

I here give a dichotomic Table which will facilitate the determination of all the species of the genus *Selaginopsis*:—

1. Branches springing from two sides only of the stem
(colony pinnate) 2.
Branches springing from all sides of the stem (colony
of the form of *Thujaria thuja*, except *S. triserialis*). 8.
2. Branches subdividing into branchlets 3.
Branches simple, not subdividing 4.
3. Hydrothecæ arranged in four series; branches not
wide *S. pacifica*.
Hydrothecæ in from four to six series; branches
broader, cylindrical *S. cylindrica*.
4. Hydrothecæ arranged in six series 5.
Hydrothecæ in four series 6.
5. Hydrothecæ entirely immersed in the substance of
the branch; margins of the aperture smooth .. *S. Hincksii*.
Upper part of hydrothecæ projecting; aperture with
two teeth *S. mirabilis*.
6. The four series arranged in pairs 7.
The four series not arranged in pairs *S. pinnata*.
7. The two series of one pair distinct; hydrothecæ
cylindrical, long *S. Allmani*.
The two series of one pair not distinct; hydrothecæ
not cylindrical, more or less quadrate *S. fusca*.
8. Hydrothecæ arranged in three series *S. triserialis*.
Hydrothecæ forming more than three series; colonies
of the form of *Thujaria thuja* 9.
9. Hydrothecæ entirely immersed in the substance of
the branch; orifice with a smooth margin 10.
Hydrothecæ projecting at their upper part; orifice
with two teeth 11.
10. Three branches forming a system; series of hydro-
thecæ ten (at least) *S. decemserialis*.
Six branches forming a system; series of hydro-
thecæ six or seven *S. thuja*.
11. Four branches forming a system; series eight or
nine? *S. bidentata*.
Six branches forming a system; series eight or nine *S. ochotensis*.

I now pass to the description of a new species of *Sertularia*, and of a very interesting *Sertularella*, both from the North Pacific Ocean.

Sertularia compressa, sp. n. (Pl. XVII. figs. 17-19.)

Trophosome. Hydrorhiza in the form of stolons. Hydrocaulus short, erect, not angular, rather rigid, divided into irregular internodes, only giving off very few ramifications. Branches arranged alternately and regularly on two sides of the principal stem, straight, also divided into irregular internodes. Hydrothecæ arranged alternately, subopposite, one to three pairs in each internode, the base inflated and rounded, *the upper half strongly compressed* in a plane vertical to the

plane of ramification of the colony. Aperture oval, compressed, long but narrow, with two angles on the two sides, and two very slightly developed teeth.

Gonosome. Unknown.

Locality. Port Ajan (*M. Wosnessensky*, 1848).

Two little colonies of this hydroid were attached by the hydrorhiza to the base of a colony of *Selaginopsis pinnata*. The hydrocaulus is straight and gives origin on two sides to branches alternately arranged and forming an acute angle with the stem (Pl. XVII. fig. 17). The length of these branches gradually diminishes towards the apex. The internodes of the principal stem, as also of the branches, are very irregular; sometimes they are formed of a single pair of hydrothecæ, sometimes of two or even three pairs. The hydrothecæ (Pl. XVII. figs. 18, 19) are greatly inflated in the lower half, whilst the other half becomes suddenly very strongly compressed, forming a neck. In the plane of ramification (Pl. XVII. fig. 18) the colony has a very peculiar aspect, in consequence of the inflated portion appearing to be furnished with a very long and slender neck. This neck usually makes a more or less acute angle with the principal stem and the inferior half of the hydrotheca; and this angle sometimes becomes nearly a right angle (fig. 18, x). On turning the branch so that it may be seen from the side, the hydrothecæ assume a nearly cylindrical form (fig. 18 a) slightly widened at the base, with the two teeth of the two sides more or less developed. Sometimes the teeth are very slightly developed, so that one would call them rather two angles than two teeth. The aperture is compressed, as shown in figs. 19 and 19 a. For the better understanding of the form of the hydrothecæ I have represented one of them under a higher magnifying-power and turned a little to one side (Pl. XVII. fig. 19).

Length of the colony 12 millims.; length of the hydrothecæ 0·4, maximum breadth 0·2; width of the aperture 0·05; breadth of the whole branch, including the hydrothecæ, 0·7.

This very curious form differs from all known species of *Sertularia* by the compressed form of its hydrothecæ. It is represented in the collection of the Academy by two small colonies attached to *Selaginopsis pinnata*, and probably very young considering their small size and the absence of gonosomes.

Sertularella Clarkii, sp. n. (Pl. XVII. figs. 20-22.)

Trophosome. Hydrorhiza forming a compact layer of hydrophytons. Hydrocaulus straight, long, cylindrical, not angu-

larly bent, with regular internodes, destitute of branches to the apex, where the width of the axial tube suddenly diminishes considerably, and it at the same time gives origin to branches. Branches divided into internodes, rather short, issuing from all sides of the principal stem, one from each of its internodes, ramified in their turn so that each branch-internode gives off a secondary branch, which is divided once or twice; and all these secondary branches are turned towards the axis of the colony (inwards). Hydrothecæ tubular, a little contracted at the extremity; aperture broad oval, furnished with two large teeth arranged unsymmetrically; arrangement of the hydrothecæ, although biserial, not in the same plane, having at the first glance the appearance of being uniserial.

Gonosome unknown.

Locality. Unalashka (*M. Petelin*, 1847).

The hydrorhiza is formed by the agglomeration of hydrophytons so interlaced and bound together as to form a continuous layer of a dark brown colour, which gives origin to more than thirty colonies placed very close to each other. The hydrocauli, of a rather dark brown, are straight, not angularly bent, slightly and irregularly waved, cylindrical, and nearly of the same thickness throughout their length, except the extremity, which decreases very abruptly in diameter. The whole has very much the character of a colony of *Tubularia indivisa* (Pl. XVII. fig. 20). The whole stem is divided into regular internodes from 2 to 5 millims. long; and in all the brown part of the stem it is entirely destitute of branches. Only the upper part, the extremity, which abruptly becomes more slender, more delicate, and, at the same time, entirely colourless, begins to give origin to branches, which are also excessively delicate and entirely colourless. A long brown and rigid stem, having at its extremity a thick tuft of small, very delicate, and flexible branches, presents a very singular and unusual appearance. It sometimes happens that the principal stem bears one or a few small colourless branches about the middle or in the upper third; but this case is rare and exceptional.

The upper part of the stem is divided, like all the rest, into internodes; but these are shorter, and each of them gives origin to a single branch. The arrangement of the branches is spiral; that is to say, they spring from all sides. The branches, which are divided, like the principal stem, into regular internodes, are also divided into secondary branches, each internode giving origin to a single secondary branch, which is always turned towards the interior of the colony, so that the side of the primary branch turned towards the exterior of the

colony is always destitute of branches (Pl. XVII. fig. 22 *). There are usually eight or ten secondary branches (fig. 22, c), which are either simple or divided, usually once, rarely twice. At the same time the secondary branches are not placed in the same plane. All this division and subdivision, which is very complicated in our species, is the more difficult to see, because the branches, owing to their flexibility, curve and interlace to form a dense tuft. The hydrothecæ (Pl. XVII. fig. 21) are cylindrical, a little compressed at the extremity, a little inflated at the base, furnished with a wide aperture with its margin armed with two long teeth, which are not placed exactly opposite to each other. Their position is exactly analogous to that of the hydrothecæ in *Sertularella pinnata*, S. F. Clarke; that is to say, although biserial, they are not placed in one and the same plane, but "inclining towards each other, so that in a general view they appear to be arranged uniserially (Pl. XVII. fig. 21). The hydrothecæ on the secondary branches are arranged alternately."

Length of the largest colony 80 millims.; length of the colourless part divided into branches about 15; length of hydrothecæ 0·37, maximum breadth 0·16.

This curious species of *Sertularella* differs strikingly from all other known species by the general form of the colony, the mode of ramification, the bidentate hydrothecæ, and especially by the singular manner in which these are arranged upon the branches, affecting a uniserial arrangement. By this last character this species very distinctly approaches *Sertularella pinnata*, Clarke, the finest species that I know. *Sertularella Clarkii*, however, is distinguished from this by the absence of the plumose character of the colony (which renders *S. pinnata* so pretty), as well as by the presence of only two instead of three teeth. The arrangement of the hydrothecæ in both species has some analogy with that occurring in *Hydrallmania falcata* and in the genus *Desmoscyphus* †.

There are in the collection of the Academy more than twenty magnificent specimens of this hydroid united upon a common layer of hydrorhiza, brought from Unalashka.

I give this species its specific name in honour of the American zoologist S. F. Clarke, author of several excellent works on the Hydroids of America.

* This figure only represents the mode of ramification, in the species in question, diagrammatically.

† Allman, Journ. Linn. Soc. vol. xii. (1876), p. 264, pl. xiv. figs. 3-7, *Ann. & Mag. N. Hist.* Ser. 5, Vol. ii. 30

Sertularella pinnata, S. F. Clarke. (Pl. XVII. fig. 23.)

Sertularella pinnata, S. F. Clarke, Scient. Results Explor. Alaska, 1876, vol. i. p. 22, pl. vi. figs. 28, 29.

I think I may say that this is one of the prettiest hydroids hitherto described. It was described in 1876 by Mr. S. F. Clarke; and his description is so perfect that I can only add very little to complete it. The collection of the Academy possesses a very considerable quantity of this species, among others also coming from Unalashka, where it appears to be very abundant. The hydrothecæ are often bent in the middle, forming a fold, although this fold is also frequently wanting. Sometimes, although rarely, the arrangement of the hydrothecæ becomes normal, so to speak; *i. e.* it does not affect a uniserial mode. As Mr. Clarke has not given a figure of the whole colony, the general appearance of which is very characteristic and pretty, I think it desirable to give one (Pl. XVII. fig. 23) representing a colony with gonophores.

EXPLANATION OF THE PLATES.

PLATE XVI.

- Fig. 1.* *Selaginopsis triserialis*, sp. n.: a colony, of the natural size.
Fig. 2. A portion of a branch of the same species, enlarged 25 diameters, and drawn with the camera lucida.
Fig. 3. *Selaginopsis pinnata*, sp. n.: a colony, of the natural size; *per*, a part of the hydrorhiza in the form of a membrane.
Fig. 4. A portion of a branch of the same species, enlarged 25 diameters; drawn with the camera lucida.
Fig. 5. *Selaginopsis pacifica*, sp. n.: a colony, of the natural size.
Fig. 6. A portion of a branch of the same species, enlarged 25 diameters; drawn with the camera lucida.
Fig. 7. A gonotheca of the same species.
Fig. 8. *Selaginopsis thuja*, sp. n.: a colony, of the natural size.
Fig. 9. A system of branches of the same species, consisting of six branches.
Fig. 10. Hydrotheca of the same species, enlarged 50 diam.; drawn with the camera lucida.
Fig. 11. *Selaginopsis ochotensis*, sp. n.: a colony, of the natural size.
Fig. 12. A system of six branches of the same species, of the natural size.
Fig. 12 a. A gonotheca belonging to the same species.

PLATE XVII.

- Fig. 13.* *Selaginopsis decemserialis*, sp. n., var. *gracilis*: a colony, of the natural size, representing a variety of the species distinguished by its cylindrical form and shorter branches.
Fig. 14. A system of three branches belonging to the typical form of this species, natural size.
Fig. 15. A portion of a branch of the same species, enlarged 25 diameters, drawn with the camera lucida.
Fig. 16. A gonotheca belonging to the same species.

- Fig. 17.* *Sertularia compressa*, sp. n. : two small colonies upon a stem of *Selaginopsis pinnata*, natural size.
- Fig. 18.* A branch of the same species, enlarged 25 diameters, drawn with the camera lucida : X, the neck bent nearly at a right angle to the axis of the branch.
- Fig. 18 a.* A hydrotheca of the same species, seen from the flat side (in a plane vertical to the plane of ramification).
- Fig. 19.* A hydrotheca seen from the side, enlarged 75 diameters ; drawn with the camera lucida.
- Fig. 19 a.* The aperture and a part of the side of the hydrotheca of the same species, enlarged 50 diameters.
- Fig. 20.* *Sertularella Clarkii*, sp. n. : a colony, of the natural size.
- Fig. 21.* A portion of the colony of the same species, enlarged 50 diameters ; drawn with the camera lucida.
- Fig. 22.* A portion of the colony of the same species, represented diagrammatically, to show the mode of ramification : *a*, the principal stem ; *b*, a primary branch ; *c*, secondary branches, bearing branches of a third category.
- Fig. 23.* *Sertularella pinnata*, S. F. Clarke : a colony, of the natural size.

XLIX.—*Descriptions of two new Species of Spiders.*

By T. WORKMAN, Esq.

[Plate XVIII. figs. 1 & 2.]

Pholcus Margarita, n. sp.

♀ adult, length 9 millims. ; ♂ rather shorter.

Cephalothorax. Length 1 millim. ; round, rather squared ; colour yellow, with two black lines in front from the eyes to the falces, also a dark brown band with black margins from the eyes to the abdomen, broadest behind, sparingly covered with hairs.

Eyes eight, seated on dark spots ; the two anterior are the smallest ; those of the lateral groups are about equal in size, which groups are placed about the breadth of one of the eyes apart.

Legs very long and slender, provided with short fine hairs ; relative length of legs of male 1, 2, 4, 3 ; total length of anterior legs 63 millims. Colour yellow, with white markings at the end of the femur and tibia, the end of the genual joint dark brown ; superior claws of tarsus deeply pectinated.

Palpi short, strong ; colour yellow. Palpal organs of male well developed, but simple in structure, having a sort of conical tube projecting downwards with black points, as seen from outer side ; female palpi terminated with two simple claws.

Falces short, vertical ; colour brown ; armed on inner edge with a short strong spine.